M. Ferrara (a cura di), Luigi Sturzo, a cura di E. Bruzzone, Caltanissetta, Centro Studi Cammarata – Edizioni Lussografica, 2016

Childhood and Adolescent Predictors of Late Onset Criminal Careers

Georgia Zara, Ph.D.
Department of Psychology, University of Turin, Italy

David P. Farrington, Ph.D.
Institute of Criminology, University of Cambridge, UK

Key words:
nervousness, anxiety, late onset, delayed criminal career

Abstract

This study explores the emergence of a criminal career in adulthood. The main hypothesis tested is that late criminal onset (at age 21 or later) is influenced by early factors that delay antisocial manifestations. The Cambridge Study in Delinquent Development (CSDD) was used to examine early determinants of criminal behavior. 400 Inner London males were followed from ages 8-10 to 48-50, and were classified as follows: 35 late onsetters who were first convicted at age 21 or later, and did not have high self-reported delinquency at ages 10-14 and 15-18; 129 early onsetters first convicted between ages 10 and 20; and 236 unconvicted males. Odds ratios and logistic regression analyses revealed that the best predictors of late onset offenders compared with early onset offenders included nervousness, having few friends at ages 8-10, and not having sexual intercourse by age 18. The best predictors of late onset offenders compared with nonoffenders included teacher-rated anxiousness at ages 12-14 and high neuroticism at age 16. It is concluded that being nervous and withdrawn protected boys against offending in adolescence but that these protective effects tended to wear off after age 21. These findings show that adult offending can be predicted from childhood, and suggest that early intervention might prevent a variety of maladjustment problems and difficulties in adult life.

Criminal psychologists have long been involved in researching the longitudinal patterning of criminal behavior over the life-course, namely how and why it begins, develops, continues, and ends. While most studies have focussed on early onset as a key factor in a long, serious and escalating criminal career, there have been very few investigations of the mechanisms involved in delayed criminal manifestations and in late criminal onset. Previous longitudinal findings (Farrington, 1986, 1991) have showed that offending is not predominantly an adolescent phenomenon. Individuals who commit offenses do not all begin at the same age and with the same patterns (Farrington, 1989b; Piquero, Farrington, & Blumstein, 2003). Variations in the ages of antisocial onsets are central to understanding the causes of criminality development (Lahey & Waldman, 2003; Lahey, Waldman, & McBurnett, 1999; Loeber & Farrington, 2001a, 2001b; Moffitt, 1993). A comprehensive model of criminal careers must not only describe differences in the ages of criminal onsets but also explain why some individuals continue, why others improve or worsen, and why others desist from or never begin a criminal career. For the study of adult criminal onset to provide insights over and above those gained from the study of early onset, researchers have to search for factors that may act as a buffer against offending and delay the beginning of antisocial manifestations.

The rationale for this study is based on the widely accepted idea that early interventions may reduce the risk of late criminality. Identifying and tackling those factors involved in the delayed manifestation of criminal behavior may prevent the emergence of adult criminal onset, and may lead to a better understanding of how and why certain early factors may exert a prosocial influence in childhood and adolescence, while in adulthood they are more likely to encourage antisocial behavior. The challenge of this work is to empirically demonstrate the link between past and future behavior on the basis of certain individual differences that are likely to persist over time, despite their phenotypical (behavioral) variation. Thus, the emphasis is on both the process of change in behavior over time, and continuity among diverse criminal onsets (Farrington, 2005). In the Cambridge Study (described below), a shy and timid temperament tended to prevent a boy from

becoming delinquent, and this was one of the very few instances in which an apparent adverse feature was associated with an encouraging outcome (West & Farrington, 1977). Even though researchers (Kagan & Snidman, 1991; Kagan, Snidman, & Arcus, 1993) recognize the influence that shyness, anxiety, inhibition, and neuroticism have on behavior, there is no agreement about the direction of effect. Anxiety, nervousness and inhibition seem sometimes to be associated with an increased risk of antisocial problems and sometimes with a decreased risk (Lahey & Waldman, 2005). Anxious and nervous children (e.g. being worried for no reason, being shy, weary, withdrawn or socially isolated, avoiding situations that cause nervousness, tenseness or a sense of inadequacy) do not get involved with others in daring or risk-taking activities, and so anxiety and nervousness have proximal protective effects. However, when anxiety and inhibition reflect negative emotionality, they tend to be positively associated with conduct disorders (Lahey & Waldman, 2005). Inhibited children are likely to have high right frontal lobe activation (Fox, 1991, 1994), and may be less able to express negative affect and less able to modulate their affect in general. Perhaps because of these difficulties in emotion regulation, these children may be withdrawn, socially anxious, and have few, if any, friends. These characteristics, that in early life may have had a buffering effect against antisocial influences, might tend to lose their protective power as individuals age (Kerr, Tremblay, Pagani, & Vitaro, 1997). This leaves individuals socially unprepared, ill-equipped, risk-exposed, vulnerable, or inexperienced to deal with external, stressful and antisocial influences (Rutter, 2003). The main aim of this article is to investigate late onset criminal careers, to see how early they can be predicted, and examine which early psychological characteristics may play a significant role in delaying antisocial onset until adulthood.

What is a Late Criminal Career?

We define a late criminal career as a pattern of antisocial and/or criminal behavior whose official onset (i.e. age of first conviction) occurs only in adult life, at the age of 21 or later. The age of 21 is considered as a suitable age cut-off for establishing late onset, and it marks, not only the legal, but also the psychological and social scope of accurate adulthood. To our knowledge, this

study is the first to have used this threshold of late criminal onset in adulthood. In most studies, late onset is before age 21. It is also the first time that a prospective longitudinal study has been used to investigate true late criminal onset. Very few studies have devoted their attention to late or adult antisocial onset (Eggleston & Laub, 2002; Gomez-Smith & Piquero, 2005). Some seemed more interested in emphasizing the proximal and social influences on a late criminal career (Laub & Sampson, 2003). Others investigated the role of family relationships and the level of closeness to parents as differential predictors of late criminal onset compared with adolescent or chronic delinquency (Mata & van Dulmen, 2007). Other researchers (Klevens, Restrepo, Roca, & Martinez, 2000) started to investigate the possibility of early psychological and social influences on future behavior, when comparing early versus late (adolescent) antisocial onset. Others (Krohn, Thornberry, Rivera, & Le Blanc, 2001, p. 69) argued that "antisocial onset is continuously distributed over childhood and adolescence", and that causal influences on early onset may be more powerful than, but not necessarily different from, causal influences on late onset. The differentiation between early and late starters is associated with the intensity of structural, psychological, and social deficits experienced by individuals and their families. The dynamic perspective of Thornberry et al. (2003) especially focuses on the cumulative effect of antisocial behavior on the individual's ability to make successful transitions through life, rather than attempting to explore the processes that differentiate early and late criminal onsets.

The speculation that a delayed criminal onset could explain certain antisocial patterns of criminal careers has not come without debate (Gomez-Smith & Piquero, 2005). There are in the literature at least four theoretical controversies that proffered explanatory assumptions of the unlikelihood of adult-onset criminal behavior, and almost reduced it to an unimportant topic in psycho-criminological research. This current study is motivated to shed some light on the significance of bringing adult criminal onset into the study of delinquency development, and to contribute to a wider understanding of the psychological and behavioral heterogeneity underlying

early and late criminal onsets. To address these tasks also requires counterarguing the theoretical controversies that see adult criminal onset as negligible.

The *"apparent late onset" controversy*. It is argued that late starters are not really different from early starters in their antisocial potential. It is just that their antisocial potential never took the phenotypical form, earlier in life, of illegal behavior. Researchers might be dealing with apparent late onset, because adult onset criminality is preceded by juvenile maladjustment, antisocial conduct, and/or major mental illness, as in the study of Elander et al. (2000). It is suggested that late onset offenders were previously antisocial but not criminal. Hence, it is not necessary to postulate a true late onset group (Moffitt, 2006b).

The *"bond to society" controversy*. It is suggested that adult crime is likely to occur when bonds to society are weakened, and therefore that it cannot be predicted by early childhood factors. Under the umbrella of the age-graded theory (Sampson & Laub, 1993, 2005a), informal social control in adulthood (e.g. employment, marital attachment) "explains changes in criminal behavior over the life span, independent of prior individual differences in criminal propensity" (Laub, Sampson, & Sweeten, 2006, p. 315). Thus, even if there is cumulative continuity (i.e. delinquency continuing from adolescence to adulthood because of its negative consequences for future life opportunities), it is suggested that childhood delinquency has only an indirect, weak effect on adult offending through the attenuation of social bonds (Laub et al., 2006).

The *"late blooming" controversy*. It is suggested that there exists a late blooming group (Thornberry & Krohn 2003). Late bloomers have an unusually late upswing, with offending "increasing away from a near-zero level only in mid to late adolescence" (Thornberry & Krohn 2005, p. 186). The idea is that early and late starters seem to share the feature of being both *off-time* in their criminal onsets (Elder, 1995). However, the main difference with other offenders lies in their upbringing; late bloomers are, at early ages, cocooned by their family, and by their supportive living and school environment, which provide them with a quite smooth transition through childhood and scholastic difficulties. Despite all the early protection, when late bloomers enter the

adult world, they are incapable of responding adequately to social demands and strains, and "their deficits in human capital increase the difficulty of making successful transitions to adult roles" (Thornberry & Krohn, 2005, p. 200). It is then concluded that while childhood and adolescent factors have become, later in life, relatively weak and less influential upon the individual's behavior, deficits in human capital result in a serious disadvantage for acquiring employment, establishing an intimate relationship, and compensating for the influence of antisocial friends (Thornberry, 2005).

The *"all offenders are alike" controversy*. It is suggested that individuals with an official adult onset follow the delinquent behavioral pathway like other offenders, apart from the fact that their earlier criminality simply went undetected by authorities or was not recorded. Different from the "apparent late onset" controversy, the focus here is on the delinquent behavioral pattern rather than on the antisocial potential. Recent studies (Kazemian & Farrington, 2005) have suggested that it is important to use methods that are likely to maximize the validity of both official and self-report offending measures: official figures offer precise information about criminal events (e.g. the date of occurrence), while self-report data provide more details of the nature of offending (e.g. frequency, co-offending, motives, escalation etc.). Official and self-report data compensate for the limitations of each other, and both are useful in studying the development of individual criminal careers (Huizinga & Elliott, 1986; Farrington, 1989a; Farrington et al., 2003).

These four controversies have sometimes challenged the rationale for studying late onset offenders. The empirical concern is that late onset offenders may overlap with earlier onsetters in most of their characteristics, except for the age of official onset; they may simply have been undetected or unrecorded. The methodological concern refers to the mismatch between official and self-report data, with official data indicating late onset but self-report data perhaps suggesting an earlier onset.

Hypotheses

This study attempts to pose counterarguments to these controversies. The aim is to examine

to what extent early adult criminality can be predicted. The main hypothesis tested in this study is that late criminal onset is influenced by early factors that delay antisocial and criminal manifestations, and put the individual at risk for a subsequent delayed criminal career. Following on from this assumption, four other hypotheses can be tested.

1. Adult criminal behavior can be predicted from childhood. Hence, a real late criminal onset is plausible and not unlikely.

2. There are psychological and temperamental factors (e.g. anxiety, inhibition, nervousness, shyness, neuroticism, and social isolation) that play a role in delaying offending until adulthood. Thus, there are early predictors of late onset.

3. Late onset criminal behavior is associated with childhood factors that early in life act as protectors against delinquency. Hence, there exists an early blooming of late criminality.

4. Adult onset and early onset criminal behavior differ in the constellation of risk factors that are present in childhood and adolescence, making adult onsetters different from early offenders, and more behaviorally similar to nonoffenders, early in their life. Thus, individual differences represent a key factor in the patterning of criminal careers.

Method

This paper uses prospective longitudinal data (official and self-reported) on the development of antisocial and criminal behavior in the life course (from childhood to adulthood) from the Cambridge Study in Delinquent Development (CSDD). The CSDD surveys the development of 411 South London boys, mostly born in 1953. The Study began in 1961. Those in the sample were followed prospectively and assessed from ages 8-10 to ages 48-50. Nine face-to-face interviews have been completed with them over a forty-year period, and the attrition rate has been extraordinarily low for such a long-term study (Piquero et al., 2007). At age 32, 378 of the 403 men still alive (94%) were contacted (Farrington, 2003), while the figure at age 48 was 365 out

of 394 alive (93%) (Farrington et al., 2006). The majority of the boys in the sample (n = 399) were chosen by taking all the boys who were attending 6 state primary schools within a one-mile (1.6 km) radius of the research office established for the purpose of this investigation. Twelve other boys were drawn from a local school for the educationally subnormal with the aim of attempting to make the sample more representative of the male population of the area. Most of the boys were of British origin (n = 357, 87%), and were being brought up by parents who themselves grew up in England, Wales or Scotland. Of the remaining 54 boys, 12 had a parent of West Indian or African origin; the other 42 boys were White but of non-British origin. Almost all boys were living in traditional two-parent families with both a father and a mother figure present in the home (Farrington, 2003).

Sample

The sample used in the present study was divided into different groups depending on their official offending (conviction) status. Early starters (ES) (n = 129) were defined as those individuals with a criminal onset before age 21. Late starters (LS) (n = 35) were those offenders whose criminal career began at the age of 21 or later; nonoffenders (NO) (n = 236) were those who had no criminal record. The average age of first conviction for an early criminal career was 15.75, while for a late career it was 30.73.

Offenses were defined as acts leading to convictions (Farrington, 2003; Farrington et al., 2006). Convictions were counted if they were for 'standard list' more serious offenses. Most recorded crimes were of theft, burglary, violence, vandalism, fraud, or drug use; all motoring offenses were excluded. Up to 1994, when most of the males were aged 40, criminal record searches were carried out in the Central Criminal Record Office (National Identification Service) at Scotland Yard in London. From 1995 onward convictions were recorded on the Police National Computer (PNC) and therefore searches were based on this database. The latest search of criminal records occurred in December 2004 (Farrington et al., 2006). According to criminal records, of the 404 males at risk of having a conviction recorded, excluding seven participants who emigrated

early and were not subsequently searched, 167 of them (41%) were convicted. Most official offenders (n = 83) were first convicted between ages 13 and 17, and the 35 late onset offenders were spread over a time period of 30 years (between ages 21 and 50), with only six first offenders after age 35 (Farrington et al., 2006; see also Piquero et al., 2007). The group of late starters in this study is composed of individuals whose official and self-reported delinquency records, measured at ages 12-14 and 16-18, were congruent. Official record and self-report data were examined to ensure that the late vs. early antisocial onsetters were correctly identified. Because juvenile involvement in antisocial minor acts is quite common during the adolescent years (Emler & Reicher, 1995; Moffitt, 1993, 2006), it was decided to remove from the analysis those cases (n = 3) of late onset offenders with high self-reported delinquency scores (in the top quarter) both at ages 14 and 18. On the other hand, those cases who self-reported delinquent acts only at age 14 (n = 3) or at age 18 (n = 5), but did not have any criminal record before adulthood, were retained in the analysis. One further boy was excluded from the analysis because he died at age 23 and hence did not really have the opportunity to become a late starter. This left a total of 400 boys in the analysis.

Procedure

At the basis of this investigation is the assumption that adult offenders may not just be offenders who managed to avoid being apprehended earlier. If this were the case, there should not be any differences between late onset and early offenders.

The research procedure was organised in two stages. In the first stage, early offenders (convicted up to age 20), late starters (first convicted at age 21 or later), and nonoffenders were contrasted to analyze whether adult offenders were exposed in childhood and adolescence to factors that may have had a buffering effect against delinquent influences, so as to prevent an early antisocial onset. In the second stage, attention was given to exploring why adult offenders started a late criminal career, while nonoffenders continued to remain unconvicted and early offenders were convicted early in life, and to identifying differences and similarities among offending onsets.

This article analyzes a wide range of childhood, adolescent and early adulthood risk factors,

including standardized measures derived from participants themselves and their parents, teachers, peers, psychologists, social workers, and psychiatrists. Boys were interviewed and assessed between ages 8 and 48. Parents were also interviewed about once a year from when the boys were 8 until when they were 15. They provided details on matters such as boy's daring or nervousness, family income, family composition, their employment history, child-rearing pattern including discipline and supervision, their (temporary or permanent) separation from them, and their history of psychiatric treatment. Boys' teachers completed questionnaires when the boys were about 8, 10, 12 and 14, and furnished details on topics such as their troublesome and aggressive school behavior, restlessness, concentration, truancy, school attainment and disruptive behavior in class. Ratings were also obtained from the boys' peers about their daring, dishonesty, troublesomeness, and popularity.

Study Validity

Numerous tests of validity were carried out on the data collected between ages 8 and 32, in most cases based on a comparison between interview data and external information from records, and between different sources of ratings (e.g. mothers, teachers, peers). For example, self-reported convictions were compared with official criminal records. Reliability checks were also made. Information about a given topic (e.g. age of leaving school) from different interviews was compared, as was information about the same topic in different stages of the same interview. The measures, tests of validity and reliability, and major findings have been reported in five books (West, 1969, 1982; West & Farrington, 1973, 1977; Piquero et al., 2007), and many comprehensive publications (see Farrington, 1995, 1997, 2003).

Explanatory and outcome variables

Late criminal onset is the outcome variable measured in this study. A range of 81 predictors represents the explanatory variables (see Tables 1, 3, 4 and 5), divided into four main time periods: childhood (ages 8-10), adolescence (ages 12-14), the teenage years (ages 16-18), and adulthood (age 32). For each period, predictors were organized into categories: psychological/individual,

school, family, socio-economic, social, and behavioral.

Analytic Strategy

A set of 24 key dichotomous variables assessed in childhood (ages 8-10), 19 key variables assessed in early adolescence (ages 12-14), 19 in the teenage years (ages 16-18), and 19 in adulthood (age 32) were examined in relation to early offenders, late starters, and nonoffenders. The rationale behind this procedure was to compare the importance of different variables, and also to use a risk factor approach, which helps target prediction and intervention efforts (Farrington, 2007; Sherman, Farrington, Welsh, & MacKenzie, 2002). In order to explore the extent to which these predictors were associated with criminal onset at different stages of individual development, and might have acted as delayers of antisocial manifestations in adult onsetters, a two-step analysis was carried out.

First, the odds ratio (OR) was calculated to identify which factors significantly predicted later criminal careers. The OR provides information about the existence, direction, and strength of an association between target and comparison groups regarding the likelihood of an event occurring (Farrington & Loeber, 2000). Where odds ratios are higher than 1, people with that particular attribute have relatively higher odds of offending than those who do not have this attribute. The use of the OR produces a more encouraging view about the prediction, explanation, and prevention of offending (Farrington & Loeber, 2000; Farrington & Welsh, 2007).

Second, the predictors, which in the first analysis were identified as potential explanatory factors in the etiology of adult onset offending, were included in a series of logistic regression analyses. The rationale behind logistic regression is to build multi-variable explanatory models that best account for observed variation in the outcome variable and identify which explanatory variables have independent influences on it. To identify which of the risk factors were significant independent predictors of criminal onset, the variables were entered into a forward stepwise logistic regression model, and only those predictors with a significant or near-significant weighting in the equation were retained.

Results

Overall this study tested 81 variables, and 59 of them were statistically significant in distinguishing late offenders from nonoffenders or early offenders. The percentage of statistically significant results (59 out of 162, or 36.4%) was very much greater than the chance expectation of 5%, suggesting that very few results were attributable to chance. We considered using the Bonferroni correction but decided not to in light of the convincing arguments of Perneger (1998).

Childhood Predictors

Early factors significantly predicted differences among criminal onsets. Table 1 shows childhood features of criminal onset for the late starter (LS), early starter (ES), and nonoffender (NO) groups. The percentages of each group possessing each risk factor are shown. Late starters were significantly different from other groups in some aspects of their childhood lives. They tended to be more nervous, more impulsive, lacking in concentration or restless, and were less likely to be troublesome or daring.

TABLE 1 HERE

Psychological/individual and social.

Late starters, in comparison with nonoffenders, were more impulsive or clumsy (OR = 2.1, CI = 1.0 - 4.5), and had poor concentration (OR = 2.2, CI = 1.0 - 5.2). The risk factors of being nervous or withdrawn, and having few friends (i.e. social isolation) were quite exceptional in being associated with an increased likelihood of late onset. Those boys who were rated as particularly nervous or isolated were likely to become late starters; 36.4% of late starters versus 25.2% of nonoffenders were rated as nervous (OR = 1.7, CI = .80 - 3.7). Despite the finding not being significant (on a two-tailed test), this predictor deserves further investigation. When LS offenders were compared with ES offenders (17.6%), being nervous was significantly associated with adult onset (OR = .38, CI = .16 - .88), so that a delay in the onset of a criminal career was more likely to occur when the boy was nervous, withdrawn, or inhibited in childhood. Table 2 shows how the proportion of those who were nervous was distributed as the age of criminal onset increased. It can

be seen that those males first convicted between ages 26 and 50 were the most nervous at ages 8-10 (see Table 2). When late starters were compared with early starters, having few friends also significantly predicted late criminality (OR = .29, CI = .09 - .95).

TABLE 2 HERE

School.

Unsurprisingly, late starters had lower verbal (OR = 2.1, CI = 1.0 - 4.6) and non-verbal IQ (OR = 2.3, CI = 1.1 - 5.1) in comparison with nonoffenders. They also were more likely to have low junior school attainment (OR = 2.7, CI = 1.2 - 6.1).

Family.

Compared with nonoffenders, late starters were significantly more physically neglected (OR = 3.4, CI = 1.2 - 9.6), lived in poor housing (neglected accommodation, poor decoration and interior, inadequate and old furniture, etc.) (OR = 3.1, CI = 1.5 - 6.4), came from large sized families (i.e. boys with five or more siblings) (OR = 2.7, CI = 1.2 - 5.9), and came from disrupted families (i.e. a permanent or temporary separation from a parent up to age 10) (OR = 2.5, CI = 1.1 - 5.7). These family conditions may have contributed to the boys' sense of social inadequacy and anxiety, leaving them poorly equipped to cope competently with adult life pressures and difficulties.

Socio-economic and behavioral.

No significant differences were found between late starters and nonoffenders on low family income, poor child-rearing, or criminal parents. Also, late starters and nonoffenders did not differ in daring or risk-taking, troublesomeness, or difficulty of disciplining. Significant differences were found for all these risk factors between late and early starters (see Table 1).

Adolescent Predictors

Table 3 shows adolescent (ages 12-14) features of the onset groups.

TABLE 3 HERE

Psychological/individual and school.

Late starters were significantly more likely to be highly anxious adolescents compared with

nonoffenders (OR = 2.8, CI = 1.0 - 7.9). It was also more likely that late starters had a low verbal IQ (OR = 2.0, CI = 1.0 - 4.5), and left school earlier (OR = 2.1, CI = 1.0 - 4.4) than nonoffenders. Late starters and nonoffenders did not differ in their daring or mental concentration. In comparison with early offenders, late starters were less likely *to manifest teacher-rated aggressiveness (OR = 3.5, CI = 1.5 - 8.1).*

Social and behavioral.

Late starters and nonoffenders did not differ in the risk of having delinquent friends, in self-reported delinquency and self-reported violence, in lying, hostility to police, or stealing outside their home. Late starters differed from early offenders especially in antisocial features such as self-reported delinquency (OR = 8.4, CI = 2.4 - 28.9), self-reported violence (OR = 3.2, CI = 1.3 - 7.8), having antisocial friends (OR = 4.1, CI = 1.6 - 10.5), and stealing outside home (OR = 3.5, CI = 1.1 - 10.7). In all cases, late starters were less antisocial in adolescence (see Table 3).

Teenage Predictors

Table 4 shows the significant teenage (ages 16-18) features of the onset groups.

Psychological/individual.

The most significant individual difference between late starters and nonoffenders was that the late starters had a high level of neuroticism; 40% of late starters were highly neurotic, in comparison with 21.5% of nonoffenders (OR = 2.4, CI = 1.2 - 5.1). Late starters were also more likely than nonoffenders to express anti-establishment attitudes (OR = 2.3, CI = 1.0 - 5.1) and to report an erratic job history (OR = 2.3, CI = 1.0 - 5.5). Interestingly, they did not differ in their level of aggressiveness.

Late starters were also significantly less likely to express aggressive attitudes (OR = 5.7, CI = 1.6 - 19.7) in comparison with early offenders. Also, never having had sexual intercourse (based on self-reported information) was related to late criminal onset (OR = .15, CI = .05 - .39); 35.3% of late starters in comparison with 7.3% of early offenders had never had sexual intercourse, which may be related to their level of anxiety and neuroticism, which in turn might have amplified their

difficulty in social relationships (see Table 4).

TABLE 4 HERE

Socio-economic and behavioral.

Late starters were more likely than nonoffenders to report an erratic job history (OR = 2.3, CI = 1.0 - 5.5), but no differences were found in the level of unemployment. Early starters were more likely to report high unemployment and to have unskilled manual jobs than late starters. Late starters and nonoffenders did not differ in having debts, heavy drinking, heavy gambling, self-reported delinquency or self-reported violence. Late starters and early offenders were significantly different in all antisocial features such as self-reported violence (OR = 25.5, CI = 3.4 - 192.1), self-reported delinquency (OR = 6.0, CI = 2.2 - 16.5), and heavy gambling (OR = 6.3, CI = 1.8 - 21.8).

Adulthood Correlates

While in adulthood some of the differences between late starters and nonoffenders intensified, in most cases the differences between late and early offenders decreased, as shown in Table 5.

TABLE 5 HERE

Psychological/individual.

A significant difference was found between late and early starters in relation to hospital treatment for illness (OR = 5.2, CI = 1.2 - 23.0). Early starters had more hospital treatment.

Socio-economic.

Late starters endured a higher level of unemployment (OR = 2.3, CI = .85 - 6.2) and poorer home conditions (OR = 2.2, CI = .92 - 5.2) than nonoffenders. Late starters differed from early offenders in having short duration jobs (OR = 3.2, CI = 1.0 - 9.8).

Behavioral.

Late starters reported higher levels of self-reported delinquency (OR = 4.3, CI = 1.9 - 9.8) in comparison with nonoffenders. In comparison with early starters, late starters were less likely to be involved in heavy drinking (OR = 2.4, CI = 1.1 - 5.3) or self-reported drug use (OR = 2.4, CI = .90

- 6.2); no differences were found in self-reported offending.

Life success.

Late starters were more unsuccessful than nonoffenders in many aspects of their lives; 40.6% of late starters were leading unsuccessful lives, in comparison with 12.2% of non-offenders (OR = 4.9, CI = 2.2 - 11.1). No differences were found between late and early starter offenders in this. The life success index was a combined measure based on 9 criteria: unsatisfactory accommodation; unsatisfactory cohabitation; unsuccessful with children; unsatisfactory employment history; involved in fights in the last five years; substance use in the last five years; self-reported offenses (other than theft from work or tax fraud) in the last five years; unsatisfactory mental health (scoring five or more on the General Health Questionnaire); convictions in the last five years (see Table 5).

Regression Analyses

Different logistic regressions were carried out for each age group, and then all the most significant predictors for each age group (8-18) were included together in a final comprehensive logistic regression analysis. Tables 6 and 7 show the variables that were selected in the model in order of their strength of prediction (i.e. their contribution to the predictive power of the model), the change in the likelihood ratio chi-squared (LRCS), and the partial odds ratio (OR) in the final model.

Predictors of late starters versus nonoffenders.

The most important ages 8-10 predictors of late starters were poor housing and low nonverbal IQ. At age 12-14, high anxiety (rated by teachers) was the only independent predictor of late offending. The most important predictors at ages 16-18 were high neuroticism (measured by the Eysenck Personality Inventory), and an unstable job record. The independent predictors at ages 8-18 were poor housing, high neuroticism, and high anxiety (see Table 6).

TABLE 6 HERE

Predictors of late starters versus early starters.

Late starters were significantly less likely to have criminal parents and poor child-rearing but significantly more likely to be nervous and to have few or no friends at ages 8-10. At ages 12-14, aggressiveness and high self-reported delinquency were the strongest independent predictors of early offending. The most important predictors at ages 16-18 were self-reported violence, heavy gambling, involvement in antisocial groups, and having high debts (see Table 7). Late starters were significantly less likely to have had sexual intercourse. In all, the significant predictors for late criminal onset measured at ages 8-18 were nervousness and no sexual intercourse, while the significant predictors for an early criminal onset were self-reported violence, antisocial group activity, gambling, and being aggressive.

TABLE 7 HERE

Discussion

In line with the empirical hypotheses tested in this study, our results suggest that adult criminal behavior can be predicted from childhood; that early psychological and temperamental factors are likely to play a significant role in delaying offending until adulthood; that late onset offending is associated with childhood and adolescent factors that early in life perform a protective function against delinquency; and that, early in life, adult onsetters are more likely to be behaviorally similar to nonoffenders, and psychologically and behaviorally dissimilar from early offenders. It is clear that late onset offenders, in this study, were interestingly and markedly different from early offenders, especially in childhood, in their level of nervousness, neuroticism and anxiety.

Childhood predictors

Late starters (36.4%) tended to be disproportionally nervous at age 8-10 when compared with nonoffenders (25.2%), and when compared with early starters (17.6%). They were also more socially isolated, with few or no friends. These findings suggest that early in their life late starters were more similar to nonoffenders in some aspects, psychologically and temperamentally, which may explain why in adolescence and the teenage years they were likely to be socially well behaved.

They also suggest that the inhibitory impact of nervousness on early criminal onset is likely to change in adulthood when it is combined with other factors (e.g. neuroticism, unstable job records) that promote criminality.

Overall, our nervous boys resemble the inhibited children in Caspi and Silva's work (1995) who were shy and fearful already from age 3 and had difficulty in concentrating on tasks in novel settings. While in adulthood these children were characterized by an over-controlled, restrained behavioral style, and a nonassertive personality, the nervous and anxious children in our study were likely in adulthood to begin a criminal career. This discrepancy between the findings of the two studies is just an apparent one, and in fact it could be explained by the fact that in Caspi and Silva's study the analysis was carried out for a period of 15 years (from ages 3 to 18), while in this study the longitudinal span included data from ages 8-10 to 48-50.

Social isolation may be a quite effortless behavioral preference for a nervous and shy child aged 8-10, and for an anxious adolescent. Given that peer pressure is associated with adolescent delinquency (Tremblay, Vitaro, Nagin, Pagano, & Séguin, 2003), having few or no friends may constitute a kind of defensive shield. However, it may become more difficult later in life to avoid offending, especially when the individual faces the adult world outside the family protective cocoon. These factors seem to have only temporarily reduced the levels of social impairment in those nervous and anxious children who later became offenders. Possibly isolated, neurotic and anxious individuals began offending in response to adult social stress, uncertainties and adversities. This is not to say that anxious or nervous children are destined for a life of crime in adulthood, but we can gain new insight into how children, with certain psychological or temperamental characteristics, could find themselves in high-risk situations later in their lives (Moffitt & Caspi, 2007).

Another aspect that deserves attention involves the extent to which children who came from poor housing were more likely, in comparison with nonoffenders, to become adult offenders. Previous research (Murray & Farrington, 2005) has already demonstrated the impact of problematic

family conditions upon the individual criminal career, and not surprisingly, having a criminal parent or coming from a poor child-rearing environment more than doubles the risk of beginning an early criminal career. These results clearly suggest that family conditions and parental criminality are not just indicators of family maladjustments, but especially bestow specific risk on the life of children. The significance of these factors as predictors of offending has been demonstrated in numerous studies (Farrington, Gallagher, Morley, St. Ledger, & West, 1988a, 1988b; Fergusson, Vitaro, Wanner, & Brendgen, 2007; Gulotta, 2002, 2005; Lahey, Loeber, Burke, & Rathouz, 2002; Lösel, 2002; Murray & Farrington, 2005; Piquero et al., 2007; Rutter, Giller, & Hagell, 1998).

Adolescent predictors

At ages 12-14, in comparison with nonoffenders, late offenders were highly anxious, had a low verbal IQ, and left school prematurely, in most cases without taking or passing any exams. Previous studies (Thornberry, Lizotte, Krohn, Smith, & Porter, 2003; Tremblay et al. 2003) have confirmed a significant association between academic failure and delinquency. Anxiety seems to characterize the adolescent years of late starters, which may have prevented these individuals from getting too exposed to antisocial and deviant peer influences.

Teenage predictors

At ages 16-18 late starters were characterized by high neuroticism, which may have played an inhibitory and over-controlling role. They may have been quite similar to the cautious, socially feeble, and submissive inhibited children at the age of 18, described by Caspi and Silva (1995). Late starters were more likely than early starters to have difficulties in establishing intimate relationships, reporting that they have not had any sexual intercourse. This may be an important reason why their antisocial onset was delayed until at least age 21, because the early protective influence of nervousness and anxiety may later have been overridden by more reactive and externalizing responses to life circumstances. This result is supported by previous empirical investigations. For example, Armour and Haynie (2007), employing data on 7,297 adolescents participating in three waves of the National Longitudinal Study of Adolescent Health, reached the

conclusion that those adolescents who had an early sexual debut, relative to their peers, were at higher risk of delinquency, compared to those whose debut was "on time" with their peers. Adolescents who had the latest sexual debut were the least likely to commit delinquency.

Adult correlates

With increasing age, the differences between onset groups seem to take a new course. Late starters appeared to become more similar to early starters in their anti-establishment attitude, in their level of high unemployment, in the quality of home conditions, in self-reporting offending, and in the degree of life failure (Farrington, 1989b, 1991). Unsurprisingly, all these variables have been shown in previous studies (Farrington, 1988a; Farrington & Maughan, 1999; Loeber, Wim Slot, Stouthamer-Loeber, 2006; Sampson & Laub, 2005b; Wikström, 2005) to be robust correlates of an adult criminal career.

Evidence-based Responses to the Four Theoretical Controversies against Late Criminal Onset

The results of this study have offered evidence to support a delayed patterning in criminal careers, the likelihood of a late criminal onset, and the significance of early factors in the prediction of adult criminal careers. Our reading of the research findings with respect to different criminal onsets (late onset, early onset and nonoffending) leads us to believe that the identification of a late criminal onset is necessary to criminal careers research, and policy and prevention strategies. What is clear is that evidence is mounting that late criminal onset exists, and can be predicted early in the life-course.

The "Real Late Onset" Explanation vs. the "Apparent Late Onset" Explanation. While early starters are similar to Moffitt's life-course persisters (1993, 2006) in the sense that they began in childhood and became worse thereafter, late starters, in this study, emerged as a distinctive group, who, after socially acceptable behavior before adulthood, found themselves inadequately equipped to cope with adult life demands and adversities. These offenders' psychological and temperamental makeup (e.g. nervousness, inhibition, anxiety, and social isolation) seems to have steered their early social path away from disruptive and delinquent pressures. However, life requires individuals to

resist the effects of environmental risk experiences and danger; robustness in the face of hazards may derive from controlled exposure to risk and life strains rather than from their avoidance (Rutter, 2006). Is a late onset group really necessary? We think so, because the late starters were relatively well-behaved before age 21.

The "Early Predictors of Late Onset" Explanation vs. the "Bond to Society" Explanation. Rather than exploring who is more likely to begin a criminal career, and explaining why, social bonding theory focuses on why most individuals follow a law-abiding life. According to this theory (Laub et al., 2006), delinquent activity can be predicted by focusing on weak social bonds and defiance of conventions. The findings gathered in this study showed that, above and beyond social factors, individual and psychological aspects could trigger a delayed antisocial onset, once their protective influence faded away. Even though, as social bonding theory suggested (Sampson & Laub, 2005), salient life events and socialization experiences in adulthood may neutralize, to some extent, the influence of early factors (Loeber & Farrington, 2001a, 2001b), an alternative explanation for their findings is that some psychological traits (e.g. nervousness, anxiety, neuroticism, etc.) and some childhood life experiences (e.g. social isolation and lack of friends) may have still exerted an impact during adult life in having perhaps left the individual ill-equipped to cope with new difficulties (e.g. no sexual intercourse, school failure, unstable jobs). Therefore, early predictors are important.

The "Early blooming of Late Criminality"Explanation vs. the "Late Blooming" Explanation. Individual differences in antisocial proneness emerge early in life and are likely to be stable throughout the life course. In line with previous studies (Loeber, 1990), childhood and adolescent features were robust and stable predictors of late criminality. Contrary to the late blooming theory (Thornberry & Krohn, 2005), these findings suggest that factors in the early life of adult offenders were serious enough to affect their later adjustment, even though their consequences were, originally, not antisocial.

The "Individual Differences" Explanation vs. the "All Offenders Are Alike" Explanation. There is unlikely to be a dramatic difference between early and late onset offenders. We would expect that variations in risk factors would reflect the continuum of criminal onsets. Nevertheless, late starters do differ, as these findings show, in their psychological traits and temperament, in their upbringing, and in the ways they react antisocially to life (Farrington, 1997, 2007).

Limitations of the Study

This study is not without limitations. It is based on a sample of working-class males from South London. It could be particularly informative for future empirical work to investigate whether the patterns of late female criminal careers are influenced by similar psychological factors (Kratzer & Hodgins, 1999; Zara, 2007). It could also be interesting to examine whether and to what extent a late onset is likely to occur in middle or upper class environments. It would also seem important to understand the connection between late onset and residual career length, and to explore whether there is an association between adult onset and crime specialization. It would also be interesting to compare findings from longitudinal studies on the development of criminal careers carried out in different countries, and examine whether the predictors of late criminal onset found in this study were replicated in different cultures.

Implications for Intervention

Since most disturbing antisocial behaviors do not emerge suddenly, and without any warning, an effective intervention agenda should plan the early prevention or treatment of those early risk factors that are likely to encourage the individual into a personal and social maladjustment trajectory later in life. For a work scheme to be convincingly sound, the targeted risk factors must be amenable to change, and, as suggested in evidence-based research (Sherman et al, 2002; Welsh & Farrington, 2006), any change is more likely the earlier the intervention occurs. Given that diverse strongest predictors of adult criminality in this study can be addressed (e.g. nervousness), kept under control (e.g. anxiety), or modified (e.g. not having had sexual intercourse), they imply possible targets for successful intervention. Hence, there is enormous

scope for significant cost savings, both economically and in the quality of life, from early intervention policies.

Conclusions

Nervousness, social isolation, anxiety, and neuroticism seem to protect against offending under age 21 but not after age 21. More research is needed to explore the interaction between these psychological and temperamental factors, and adverse social circumstances, in producing adult offending. Further research is also necessary to investigate why the protective effects disappear with increasing age, and to establish the precise causal processes linking early psychological determinants with adult criminal behavior. As Moffitt and colleagues (2002) put it, when speaking about post-pubertal delinquency onset, late onset offending certainly "warrants intervention, mainly to prevent future acquisitive crimes and, in particular, drug- and alcohol-related problems" (p. 202). And paraphrasing the key principles of intervention (Loeber & Farrington, 1998), we believe that it is *never too late for early intervention*.

Acknowledgement

The authors would like to thank Dr. Roger J. R. Levesque and two anonymous reviewers for their helpful comments on an earlier version of this article.

References

Armour, S., & Haynie, D. L., (2007). Adolescent sexual debut and later delinquency. *Journal of Youth and Adolescence, 36,* 141-152.

Caspi, A., & Moffitt, T. E. (1991). Individual differences are accentuated during periods of social change: The sample case of girls at puberty. *Journal of Personality and Social Psychology, 61,* 157-168.

Caspi, A., & Silva, P. A. (1995). Temperamental qualities at age three predict personality traits in young adulthood: Longitudinal evidence from a birth cohort. *Child Development, 66,* 486-498.

~~Demaree, H. A., Everhart, D. E., Youngstrom, E. A., & Harrison, D. W. (2005). Brain lateralization of emotional processing: Historical roots and a future incorporating "dominance". *Behavioral and Cognitive Neuroscience Review, 3*(1), 3-20.~~

Eggleston, E. P., & Laub, J. H. (2002). The onset of adult offending: A neglected dimension of the criminal career. *Journal of Criminal Justice, 30,* 603-622.

Elander, J., Rutter, M., Simonoff, E., & Pickles, A. (2000). Explanations for apparent late onset criminality in a high-risk sample of children followed up in adult life. *British Journal of Criminology, 40,* 497-509.

Elder, G. H., Jr. (1995). The life course paradigm: Social change and individual development. In P. Moen, G. H. Elder, Jr., & K. Luscher (Eds.), *Examining lives in context: Perspectives on the ecology of human development* (pp. 101-135). Washington, DC: American Psychological Association.

Emler, N., & Reicher, S. (1995). *Adolescence and delinquency*. Oxford, UK: Blackwell Publishers.

Farrington, D. P. (1986). Age and crime. In M. Tonry & N. Morris (Eds.), *Crime and justice* (Vol. 7, pp. 189-250). Chicago: University of Chicago Press.

Farrington, D. P. (1989a). Self-reported and official offending from adolescence to

adulthood. In M.W. Kelin (Ed.), *Cross-national research in self-reported crime and delinquency* (pp. 399-423). Dordecht: Kluwer.

Farrington, D. P. (1989b). Later adult life outcomes of offenders and non-offenders. In M. Brambring, F. Lösel, & H. Skowronek, (Eds.), *Children at risk: Assessment, longitudinal research, and intervention* (pp. 220-244). Berlin: De Gruyter.

Farrington, D. P. (1991). Antisocial personality from childhood to adulthood. *The Psychologist*, 4, 389-394.

Farrington, D. P. (1995). The development of offending and antisocial behavior from childhood - Key findings from the Cambridge Study in Delinquent Development. *Journal of Child Psychology and Psychiatry, 36*, 929-964.

Farrington, D. P. (1997). Human development and criminal careers. In M. Maguire, R. Morgan, & R. Reiner (Eds.), *The Oxford handbook of criminology* (2nd ed., pp. 361-408). Oxford, England: Oxford University Press.

Farrington, D. P. (2003). Key results from the first forty years of the Cambridge Study in delinquent development. In T. P. Thornberry & M. D. Krohn (Eds.), *Taking stock of delinquency: An overview of findings from contemporary longitudinal studies* (pp. 137-183). New York: Kluwer Academic/Plenum.

Farrington, D. P. (2005). Childhood origins of antisocial behavior. *Clinical Psychology and Psychotherapy*, *12*, 177-190.

Farrington, D. P. (2006). Comparing football hooligans and violent offenders: Childhood, adolescent, teenage and adult features. *Monatsschrift für Kriminologie und Strafrechtsreform, 3*, 193-205.

Farrington, D. P. (2007). Childhood risk factors and risk-focussed prevention. In M. Maguire, R. Morgan, & R. Reiner (Eds.), *The Oxford handbook of criminology* (4th ed., pp. 602-640). Oxford, England: Oxford University Press.

Farrington, D. P., Coid, J. W., Harnett, L., Jolliffe, D., Soteriou, N., Turner, R., et al.

(2006). *Criminal careers up to age 50 and life success up to age 48: New findings from the Cambridge Study in Delinquent Development* (Home Office Research Study No. 299). London: Home Office.

Farrington, D. P., Gallagher, B., Morley, L., St. Ledger, R. J., & West D. J. (1988a). A 24-year follow-up of men from vulnerable backgrounds. In R. L. Jenkins & W. K. Brown (Eds.), *The abandonment of delinquent behavior: Promoting the turnaround* (pp. 155-173). New York: Praeger.

Farrington, D. P., Gallagher, B., Morley, L., St. Ledger, R. J., & West, D. J. (1988b). Are there any successful men from criminogenic backgrounds? *Psychiatry, 51*, 116-130.

Farrington, D. P., Jolliffe, D., Hawkins, J. D., Catalano, R. F., Hill, K. G., & Kosterman, R. (2003). Comparing delinquency careers in court records and self-reports. *Criminology, 41*, 933-958.

Farrington, D.P., & Loeber, R. (2000). Some benefits of dichotomization in psychiatric and criminological research. *Criminal Behaviour and Mental Health, 10*, 100-122.

Farrington, D. P., & Maughan, B. (1999). Criminal careers of two London cohorts. *Criminal Behaviour and Mental Health, 9*, 91-106.

Farrington, D. P., & Welsh, B. C. (2003). Family based prevention of offending: A meta-analysis. *New Zealand Journal of Criminology, 36*, 127-151.

Farrington, D. P., & Welsh, B. C. (2007). *Saving children from a life of crime*. Oxford: Oxford University Press.

Farrington, D. P., & West, D. J. (1995). Effects of marriage, separation, and children on offending by adult males. In Z. S. Blau & J. Hagan (Eds.), *Current perspectives on aging and the life cycle* (Vol. 4, pp. 249-281). London: JAI Press.

Fergusson, D. M., Vitaro, F., Wanner, B., & Brendgen, M. (2007). Protective and compensatory factors mitigating the influence of deviant friends on delinquent behaviors during early adolescence. *Journal of Adolescence, 30*, 33-50.

Fox, N. A. (1991). If it's not left, it's right: Electroencephalogram asymmetry and the development of emotion. *American Psychologist, 46,* 863-872.

Fox, N. A. (1994). Dynamic cerebral processes underlying emotion regulation. *Monographs of the Society for Research in Child Development, 59*(2/3), 152-166.

Gomez-Smith, Z., & Piquero, A. R. (2005). An examination of adult onset offending. *Journal of Criminal Justice, 33,* 515-525.

Gulotta, G. (Ed.). (2002). *Elementi di psicologia giuridica e di diritto psicologico* [Juridical psychology and psychological law]. Milan: Giuffrè.

Gulotta, G. (2005). I volti dell'aggressività e dell'aggressione: Predatori, strumentali e affettivi [Faces of aggression and aggressors. Instrumental and affective predators]. In G. Gulotta & I. Merzagora Betsos (Eds.), *L'omicidio e la sua investigazione* (pp. 1-89). Milan: Giuffrè.

Huizinga, D., & Elliott, D. S. (1986). Reassessing the reliability and validity of self-report delinquency measures. *Journal of Quantitative Criminology, 2,* 293-327.

Kagan, J. (1997). Temperament and the reactions to unfamiliarity. *Child Development, 68,* 139-143.

Kagan, J., & Snidman, N. (1991). Infant predictors of inhibited and uninhibited profiles. *Psychological Science, 2,* 40-44.

Kagan, J., Snidman, N., & Arcus, D. (1993). On the temperamental categories of inhibited and uninhibited children. In K. H. Rubin & J. B. Asendorpf (Eds.), *Social withdrawal, inhibition, and shyness in childhood* (pp. 19-28). Hillsdale, NJ: Lawrence Erlbaum.

Kazemian, L., & Farrington, D. P. (2005). Comparing the validity of prospective, retrospective and official onset for different offending categories. *Journal of Quantitative Criminology, 21,* 127-147.

Kerr, M., Tremblay, R. E., Pagani, L., & Vitaro, F. (1997). Boys' behavioral inhibition and the risk of later delinquency. *Archives of General Psychiatry, 54,* 809-816.

Klevens, J., Restrepo, O., Roca, J., & Martinez, A. (2000). Comparisons of offenders with

early- and late-starting antisocial behavior in Colombia. *International Journal of Offender Therapy and Comparative Criminology, 44*, 193-203.

Kratzer, L., & Hodgins, S. (1999). A typology of offenders: A test of Moffitt's theory among males and females from childhood to age 30. *Criminal Behaviour and Mental Health*, *9*, 57-73.

Krohn, M. D., Thornberry, T. P., Rivera, C., & Le Blanc, M. (2001). Later delinquency careers. In R. Loeber & D. P. Farrington (Eds.), *Child delinquents* (pp. 67-93). Thousand Oaks CA: Sage.

Lahey, B. B., Loeber, R., Burke, J., & Rathouz, P. J. (2002). Adolescent outcomes of childhood conduct disorder among clinic-referred boys: Predictors of improvement. *Journal of Abnormal Child Psychology*, *30*, 333-348.

Lahey, B. B., Loeber, R., Burke, J. D., Rathouz, P., & McBurnett, K. (2002). Waxing and waning in concert: Dynamic comorbidity of conduct disorder with other disruptive and emotional problems over seven years among clinic-referred boys. *Journal of Abnormal Psychology, 111*, 556-567.

Lahey, B. B., & Waldman, I. D. (2003). A developmental propensity model of the origins of conduct problems during childhood and adolescence. In B. B. Lahey, T. E. Moffitt, & A. Caspi (Eds.), *Causes of conduct disorder and juvenile delinquency* (pp. 76-117). New York: Guilford.

Lahey, B. B., & Waldman, I. D. (2005). A developmental model of the propensity to offend during childhood and adolescence. In D. P. Farrington (Ed.), *Integrated developmental and life-course theories of offending (Advances in criminological theory,* Vol. 14) (pp. 15-50). New Brunswick, NJ: Transaction.

Lahey, B. B., Waldman, I. D., & McBurnett, K. (1999). The development of antisocial behavior: An integrative causal model. *Journal of Child Psychology and Psychiatry, 40*, 669-682.

Laub, J. H., & Sampson, R. J. (2003). *Shared beginnings, divergent lives: Delinquent boys to age 70*. Cambridge, MA: Harvard University Press.

Laub, J. H., Sampson, R. J., & Sweeten, G. A. (2006). Assessing Sampson and Laub's life-course theory of crime. In F. T. Cullen, J. P. Wright, & K. R. Blevins (Eds.), *Taking stock: The status of criminological theory* (*Advances in criminological theory,* Vol. 15, pp. 313-333). New Brunswick, NJ: Transaction.

Loeber, R. (1990). The stability of antisocial and delinquent child behavior: A review. *Child Development, 53,* 1431-1446.

Loeber, R., & Farrington, D. P. (1998). Never too early, never too late: Risk factors and successful interventions for serious and violent juvenile offenders. *Studies on Crime and Crime Prevention, 7,* 7-30.

Loeber, R., & Farrington, D. P. (Eds.). (2001a). *Child delinquents*. Thousand Oaks, CA: Sage.

Loeber, R., & Farrington, D. P. (2001b). The significance of child delinquency. In R. Loeber & D. P. Farrington (Eds.), *Child delinquents* (pp. 1-22). Thousand Oaks, CA: Sage.

Loeber, R., Wim Slot, N., & Stouthamer-Loeber, M. (2006). A three-dimensional, cumulative developmental model of serious delinquency. In P.-O. H. Wikström & R. J. Sampson (Eds.), *The explanation of crime. Context, mechanisms and development* (pp. 153-194). Cambridge: Cambridge University Press.

Lösel, F. (2002). Risk/need assessment and prevention of antisocial development in young people: Basic issues from a perspective of cautionary optimism. In R. R. Corrado, R. Roesch, S. Hart, & J.K. Gierowski (Eds.), *Multi-problem violent youth* (pp. 35-57). Amsterdam, Netherlands: IOS Press.

Mata, A. D., & van Dulmen, H. H. M. (2007). Adult onset antisocial behavior: The role of adolescent family relations. Paper presented at the annual meeting of the American Society of Criminology (November).

Moffitt, T. E. (1993). Adolescence-limited and life-course-persistent antisocial behavior: A development taxonomy. *Psychological Review, 100,* 674-701.

Moffitt, T. E. (2006). A review of research on the taxonomy of life-course persistent versus adolescent-limited antisocial behavior. In F. T. Cullen, J. P. Wright, & K. R. Blevins (Eds.), *Taking stock: The status of criminological theory* (*Advances in criminological theory,* Vol. 15, pp. 277-311). New Brunswick, NJ: Transaction.

Moffitt, T. E., & Caspi, A. (2007). Evidence from behavioral genetics for environment contributions to antisocial conduct. In P.-O. H. Wilkström & R. J. Sampson (Eds.), *The explanation of crime: Context, mechanisms and development* (pp. 108-152). Cambridge: Cambridge University Press.

Moffitt, T. E., Caspi, A., Harrington, H., & Milne, B. J. (2002). Males on the life-course-persistent and adolescent-limited antisocial pathways: Follow-up at age 26 years. *Development and Psychopathology, 14*, 179-207.

Perneger, T. V. (1998). What's wrong with the Bonferroni adjustments. *British Medical Journal, 316*, 1236-1238.

Piquero, A. R., Farrington, D. P., & Blumstein, A. (2003). The criminal career paradigm. In M. Tonry (Ed.), *Crime and Justice*, vol. 30 (pp. 359-506). Chicago: University of Chicago Press.

Piquero, A. R., Farrington, D. P., & Blumstein, A. (2007). *Key issues in criminal career research*. Cambridge: Cambridge University Press.

Rutter, M. (2003). Crucial paths from risk indicator to causal mechanism. In B. B. Lahey, T. E. Moffitt, & A. Caspi (Eds.), *Causes of conduct disorder and juvenile delinquency* (pp. 3-24). New York: Guilford.

Rutter, M. (2006). Implications of resilience concepts for scientific understanding. *Annals of the New York Academy of Sciences, 1094*, 1-12.

Rutter, M., Giller, H., & Hagell, A. (1998). *Antisocial behavior by young people*. Cambridge: Cambridge University Press.

Sampson, R. J., & Laub J. H. (1993). *Crime in the making: Pathways and turning points through life*. Cambridge, MA: Harvard University Press.

Sampson, R. J., & Laub, J. H. (2005a). A general age-graded theory of crime: Lessons learned and the future of life-course criminology. In D. P. Farrington (Ed.), *Integrated developmental and life-course theories of offending* (Advances in criminological theory, Vol. 14, pp. 165-181). New Brunswick, NJ: Transaction.

Sampson, R. J., & Laub, J. A. (2005b). A life-course view of the development of crime. *Annals of the American Academy of Political and Social Science, 602,* 12-45.

Sherman, L. W., Farrington, D. P., Welsh, B. C., & MacKenzie, D. L. (Eds.). (2002). *Evidence-based crime prevention*. London, UK: Routledge.

Thornberry, T. P. (2005). Explaining Multiple Patterns of Offending across the Life Course and across Generations. *The Annals of the American Academy of Political and Social Science, 602,* 156-195.

Thornberry, T. P., & Krohn, M. D. (2003). The development of panel studies of delinquency. In T. P. Thornberry, & M. D. Krohn (Eds.), *Taking stock of delinquency: An overview of findings from contemporary longitudinal studies* (pp. 1-9). New York: Kluwer Academic/Plenum.

Thornberry, T. P., & Krohn, M. D. (2005). Applying interactional theory to the explanation of continuity and change in antisocial behavior. In D. P. Farrington (Ed.), *Integrated developmental and life-course theories of offending.* (*Advances in criminological theory,* Vol. 14, pp. 183-209). New Brunswick, NJ: Transaction.

Thornberry, T. P., Lizotte, A. J., Krohn, M. D., Smith, C. A., & Porter, P. K. (2003). Causes and consequences of delinquency: Findings from the Rochester Youth Development Study. In T. P. Thornberry, & M. D. Krohn (Eds.), *Taking stock of delinquency: An overview of findings from contemporary longitudinal studies* (pp. 11-46). New York: Kluwer Academic/Plenum.

Tremblay, R. E., Vitaro, F., Nagin, D., Pagano, L., & Séguin, J. R. (2003). The Montreal Longitudinal and Experimental Study. In T. P. Thornberry & M. D. Krohn (Eds.), *Taking stock of delinquency: An overview of findings from contemporary longitudinal studies* (pp. 205-254). New

York: Kluwer Academic/Plenum.

Welsh, B. C., & Farrington, D. P. (2006). Evidence-based in crime prevention. In B. C. Welsh, & D. P. Farrington (Eds.), *Preventing crime: What works with children, offenders, victims, and places* (pp. 1-17). Dordrecht, Netherlands: Springer.

West, D. J. (1969). *Present conduct and future delinquency*. London: Heinemann.

West, D. J. (1982). *Delinquency: Its roots, causes, and prospects*. London: Heinemann.

West, D. J., & Farrington, D. P. (1973). *Who Becomes Delinquent?* London: Heinemann.

West, D. J., & Farrington, D. P. (1977). *The Delinquent Way of Life.* London: Heinemann.

Wikström, P.-O. H. (2005). The social origins of pathways in crime. In D. P. Farrington (Ed.), *Integrated developmental and life-course theories of offending (Advances in criminological theory*, Vol. 14) (pp. 211-245). New Brunswick, NJ: Transaction.

Zara, G. (2007). Female criminal careers. In E. Ciuffo, E. Colla, I. Mastropasqua, & B. Roselletti (Eds.), *For a gender perspective within the juvenile justice system* (pp. 217-232). Rome: Carocci.

Table 1

Childhood predictors of criminal onsets

Ages 8-10	Onset groups %			Odds Ratio	
Onset groups	NO (236)	LS (35)	ES (129)	LS/NO	ES/LS
Psychological/individual					
Nervous	25.2	36.4	17.6	1.7	.38*
Daring	20.6	25.7	48.8	1.3	2.8*
Poor concentration	14.0	26.5	29.5	2.2*	1.2
Impulsive	19.9	34.3	33.3	2.1*	.96
School					
Low nonverbal IQ	18.2	34.3	34.9	2.3*	1.0
Low verbal IQ	19.7	34.3	32.8	2.1*	.94
Low attainment	15.2	32.3	37.2	2.7*	1.2
Family					
Criminal parent	17.4	25.7	45.0	1.6	2.4*
Poor child-rearing	19.0	18.2	35.0	.95	2.4*
Disrupted family	15.3	31.4	33.3	2.5*	1.1
Poor supervision	12.6	24.2	31.0	2.2*	1.4
Physical neglect	6.1	18.2	22.4	3.4*	1.3
Socio-economic					
Low family income	18.2	17.1	34.1	.93	2.5*
Poor housing	27.5	54.3	50.4	3.1*	.86
Large family size	16.1	34.3	37.2	2.7*	1.1

Social					
Few friends	14.5	17.6	5.9	1.3	.29*
Behavioral					
Troublesome	12.7	20.0	40.3	1.7	2.7*
Dishonest	17.8	31.0	37.3	2.1*	1.3
Difficult to discipline	15.3	20.6	36.4	1.4	2.2*

* 95% confidence interval (CI) does not include 1.

NO = nonoffenders; LS = late starters; ES = early starters.

Nonsignificant predictors: problematic siblings; adolescent mother; unpopular boy; nervous parent; high neuroticism.

Table 2

Distribution of nervousness (at ages 8-10) by ages of criminal onset

	Ages of criminal onset						
Onset groups							
	Non- offenders	36-50	26-35	21-25	18-20	14-17	10-13
% Nervous	25.2	40.0	52.9	9.1	12.5	16.7	24.1

Note: $\chi^2 = 6.32$, $p < .042$.

Table 3

Adolescent predictors of criminal onsets

Ages 12-14	Onset groups %			Odds Ratio	
Onset groups	NO (236)	LS (35)	ES (129)	LS/NO	ES/LS
Psychological/individual					
High anxiety	6.8	17.1	11.6	2.8*	.64
Poor concentration	17.4	25.7	42.6	1.6	2.1*
Daring	8.9	8.6	22.5	1.0	3.1*
Aggressive	21.6	25.7	55.0	1.3	3.5*
School					
Low verbal IQ	16.5	28.6	33.1	2.0*	1.2
Early school leaving	51.3	68.6	76.7	2.1*	1.5
Socio-economic					
Low family income	22.8	10.0	26.2	.40	3.2*
Social					
Delinquent friends	14.9	17.1	45.7	1.2	4.1*
Behavioral					
Frequent liar	19.5	31.4	48.8	1.9	2.1*
Hostile to police	19.6	22.9	40.9	1.2	2.3*
Steals outside home	7.6	13.8	35.7	2.0	3.5*
SR delinquency	12.8	8.6	44.1	.64	8.4*
SR violence	15.7	20.0	44.1	1.3	3.2*

* 95% confidence interval (CI) does not include 1.

NO = nonoffenders; LS = late starters; ES = early starters; SR = self-reported.

Nonsignificant predictors: poor housing; large family size; nervousness; neuroticism; low nonverbal IQ; unpopular boy.

Table 4

Teenage predictors of criminal onsets

Ages 16-18	Onset groups %			Odds Ratio	
Onset groups	NO (236)	LS (35)	ES (129)	LS/NO	ES/LS
Psychological/individual					
High neuroticism	21.5	40.0	31.5	2.4*	.69
No sexual intercourse	35.4	35.3	7.3	1.0	.15*
Aggressive attitude	22.2	8.8	35.5	.40	5.7*
Anti-police attitude	13.6	20.0	42.1	1.6	2.9*
Anti-establishment attitude	17.3	32.4	37.1	2.3*	1.2
School					
No exams taken	38.8	50.0	73.4	1.6	2.8*
Socio-economic					
Unskilled manual job	7.6	8.8	34.1	1.2	5.4*
High unemployment	13.1	18.2	39.5	1.5	2.9*
Unstable job record	13.3	26.5	42.3	2.3*	2.0
Debts	22.2	14.7	30.6	.60	2.6*
Social					
Antisocial group	9.8	5.9	32.3	.58	7.6*
Behavioral					
Heavy gambling	16.5	8.8	37.9	.49	6.3*
Heavy drinking	22.7	26.5	46.8	1.3	2.4*

Fights after drinking	24.4	26.5	48.4	1.1	2.6*
SR drug use	23.6	23.5	47.6	1.0	3.0*
SR delinquency	11.6	14.7	50.8	1.3	6.0*
SR violence	10.2	2.9	43.5	.27	25.5*

* 95% confidence interval (CI) does not include 1. NO = nonoffenders; LS = late starters; ES = early starters; SR = self-reported. Nonsignificant predictors: hospitalized due to illness; impulsive.

Table 5

Adulthood correlates of criminal onsets

Age 32	Onset groups %			Odds Ratio	
Onset groups	NO (236)	LS (35)	ES (129)	LS/NO	ES/LS
Predictors					
Psychological/individual					
Hospital treatment for illness	15.1	6.7	27.0	.40	5.2*
Anti-establishment attitude	17.6	37.5	48.7	2.8*	1.6
Socio-economic					
Short duration jobs	10.0	12.5	31.3	1.3	3.2*
High unemployment	9.5	19.4	30.2	2.3	1.8
Poor home conditions	22.2	38.5	35.1	2.2	.86
Living in London	44.1	65.6	64.1	2.4*	.94
Behavioral					
Heavy drinking	28.4	40.6	62.1	1.7	2.4*
SR drug use	11.3	18.8	35.3	1.8	2.4*
SR offending	12.2	37.5	38.5	4.3*	1.0
Composite					
Life failure	12.2	40.6	44.4	4.9*	1.2

* 95% confidence interval (CI) does not include 1.

NO = nonoffenders; LS = late starters; ES = early starters; SR = self-reported.

GHQ = General Health Questionnaire.

Nonsignificant correlates: no female partner; has hit partner; impulsive; anxious/depressed (GHQ); heavy gambling; drunk driving; alcoholism (CAGE); fights; aggressive attitude.

Table 6

Logistic Regression Analyses for Variables Predicting Adult Onset in Late Starters (1) vs. Non-offenders (0)

Age	Predictors	LRCS Change*	p	Partial OR	p
8-10	Poor housing	9.46	.002	3.0	.004
	Low nonverbal IQ	3.26	.071	2.1	.063
12-14	High anxiety	3.57	.059	2.9	.044
16-18	High neuroticism	4.155	.042	2.3	.039
	Unstable job record	3.311	.069	2.3	.058
8-18	Poor housing (8-10)	9.35	.002	3.2	.002
	High neuroticism(16-18)	5.62	.018	2.4	.025
	High anxiety (12-14)	2.54	.111	2.5	.095

Note: Forward stepwise analyses using likelihood ratio method.

LRCS = Likelihood Ratio Chi-Squared; OR = Odds Ratio.

* When predictor added to equation.

Table 7

Logistic Regression Analyses for Variables Predicting Adult Onset in Early starters (1) vs. Late Starters (0)

Age	Predictors	LRCS Change*	p	Partial OR	p
8-10	Nervousness (-)	4.59	.032	0.32	.021
	Criminal parent	4.54	.033	2.88	.027
	Poor child rearing	4.22	.040	3.86	.023
	Few friends (-)	4.45	.035	0.19	.034
12-14	SR delinquency	17.72	.000	7.4	.002
	Aggressive	7.18	.007	3.1	.010
16-18	SR violence	26.26	.000	17.03	.008
	No sexual intercourse (-)	10.18	.001	.20	.009
	High gambling	7.61	.006	3.78	.053
	Gang activity	4.21	.040	4.71	.084
	High debts	3.10	.078	2.82	.084
	Hostility to police	2.91	.088	2.60	.100
8-18	SR violence (16-18)	24.78	.000	13.25	.019
	No sexual intercourse (-) (16-18)	8.31	.004	.15	.005
	Nervousness (-) (8-10)	7.88	.005	.22	.012
	Gang activity (16-18)	7.74	.005	5.54	.052

High gambling (16-18)	4.19	.041	3.61	.072
Aggressive (12-14)	3.39	.066	2.66	.072

Note:

Forward stepwise analyses using likelihood ratio method.

LRCS = Likelihood Ratio Chi-Squared. OR = Odds Ratio.

(-) = Negatively Related. * When predictor added to equation.

Georgia Zara, Ph.D. is an Associate Professor in the Department of Psychology, University of Turin, Italy. She received her Ph.D. in England in 2001 and is currently a Visiting Scholar of the Institute of Criminology, Cambridge University. Her major research interests are criminal careers, criminal persistence and recidivism, and sexual offending.

David P. Farrington, Ph.D., is Professor of Psychological Criminology at Cambridge University, and Director of the Cambridge Study in Delinquent Development. His major research interests are the development of offending and antisocial behavior from childhood to adulthood, and childhood prevention of offending based on tackling risk factors.

.